

REMARKS

Claims 1-42 are pending, with claims 1, 14, 27, and 40 being independent. Claims 1-13, 27-39, and 42 have been withdrawn from consideration.

The undersigned thanks Examiners Nguyen and Vo for the interview granted on February 3, 2004. During the interview, we discussed claim 14 and U.S. Patent No. 5,720,850 (Czubarow). The undersigned argued that Czubarow fails to describe or suggest using a silver-based composition to join a surface of a first ceramic component to a second ceramic component, where the silver-based composition is a mixture of silver metal and a metal oxide, and the metal in the metal oxide is a metal other than silver. The substance of the argument is presented below.

Additionally, upon Examiner Vo's suggestion, applicant has moved the text "the silver-based composition being a mixture of silver metal and a metal oxide, in which the metal in the metal oxide is a metal other than silver" from the preambles of claims 14 and 40 into the bodies of those claims.

The undersigned also thanks Examiner Nguyen for the indication that claim 19 recites allowable subject matter.

Independent claim 14 relates to a method of joining a surface of a first ceramic component to a surface of a second ceramic component. The method includes, among other features, applying a silver-based composition to the surface of the first ceramic component. The silver-based composition is a mixture of silver metal and a metal oxide, and the metal in the metal oxide is a metal other than silver.

Independent claim 40 relates to a method of joining a first ceramic component to a second ceramic component. The method includes, among other features, placing a silver-based composition between the first ceramic component and the second ceramic component. The silver-based composition is a mixture of silver metal and a metal oxide, and the metal in the metal oxide is a metal other than silver.

Claims 14-18, 20, 21, 24, 26, 40, and 41 have been rejected as being anticipated by Czubarow. Applicant requests withdrawal of this rejection because Czubarow fails to describe or suggest using a silver-based composition to join a surface of a first ceramic component to a

second ceramic component, where the silver-based composition is a mixture of silver metal and metal oxide, and the metal in the metal oxide is a metal other than silver, as recited in claims 14 and 40.

In Czubarow, a substrate 1 is coated with a combination 2 and heated to induce a carbothermic reduction in the combination 2 and to form a metallic electrode 3 on the substrate. See Czubarow at col. 2, lines 27-45. The combination 2 is made of a metal source such as metal oxide ( $M_xO_y$ ) and carbon (C). See Czubarow at col. 2, lines 53-54. The reduction is represented in Equation (1) as  $2M_xO_y + yC \rightarrow 2xM + yCO_2$ . See Czubarow at col. 2, lines 54-60.

If the metal in the metal oxide is silver (Ag), then Equation (1) becomes:  $2Ag_xO_y + yC \rightarrow 2xAg + yCO_2$ . In this case, before the carbothermic reduction, the combination 2 is void of a metal oxide having a metal other than silver. Rather, the metal oxide is an oxide of silver. Furthermore, the combination 2 is void of a silver metal since the only silver in the combination 2 can be found in the silver oxide ( $Ag_xO_y$ ). After the carbothermic reduction, the electrode 3 is void of a metal oxide. Rather, the only two components are silver and carbon dioxide, neither of which is a metal oxide.

If the metal in the metal oxide is a metal other than silver, then both the combination 2 and the electrode 3 are void of a silver metal.

For at least these reasons, claims 14 and 40 are allowable in view of Czubarow. Claims 15-18, 20, 21, 24, 26, and 41 depend from claims 14 or 40 and are allowable for at least the reasons that claims 14 and 40 are allowable.

Claims 22, 23, and 25 have been rejected as being obvious over Czubarow in view of U.S. Patent No. 4,369,063 (McGowan), which describes a composition used as a conductive coating on heating elements and printed circuits. See McGowan at abstract. McGowan's composition is made of a silver metal, a glass frit system, a selenium component, and a vehicle. See McGowan at abstract.

Applicant requests reconsideration and withdrawal of this rejection because one of ordinary skill in the art would have had no motivation to combine Czubarow and McGowan to produce the subject matter of claim 14, from which claims 22, 23, and 25 depend. As discussed

above, Czubarow fails to describe or suggest using a silver-based composition to join a surface of a first ceramic component to a second ceramic component, where the silver-based composition is a mixture of silver metal and metal oxide, and the metal in the metal oxide is a metal other than silver. Nothing in Czubarow or McGowan would have motivated one of ordinary skill in the art to modify Czubarow using the conductive coating of McGowan.

Though McGowan's composition bonds to the substrate, McGowan never suggests that the composition can be used to form a bond between ceramic components. Indeed, McGowan's only use for the composition appears to be to provide electrical conduction. Moreover, any such modification of Czubarow would change the principle of operation of Czubarow's method. If Czubarow's combination were to be modified with the conductive coating of McGowan, then Czubarow could not bond components using the carbothermic reduction. Thus, modification of Czubarow in this manner would be contrary to the purpose of Czubarow's disclosure.

The office action states that McGowan "discloses that the coatings are applicable for manufacturing" resistors and capacitors (col. 4, lines 3-5). However, this passage does not provide the motivation for using McGowan's coating to join a surface of a first ceramic component with a surface of a second ceramic component.

Accordingly, claim 14 is allowable over Czubarow in view of McGowan.

Claims 22, 23, and 25 are allowable for at least the reasons that claim 14 is allowable.

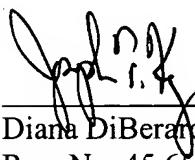
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Respectfully submitted,

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for Joseph F. Key Reg. No. 44,827  
Diana DiBerardino  
Reg. No. 45,653

Fish & Richardson P.C.  
1425 K Street, N.W.  
11th Floor  
Washington, DC 20005-3500  
Telephone: (202) 783-5070  
Facsimile: (202) 783-2331

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